O. WIEDEKE.

TUBE EXPANDER.

APPLICATION FILED JAN. 10, 1914.

1,102,994. Patented July 7, 1914.

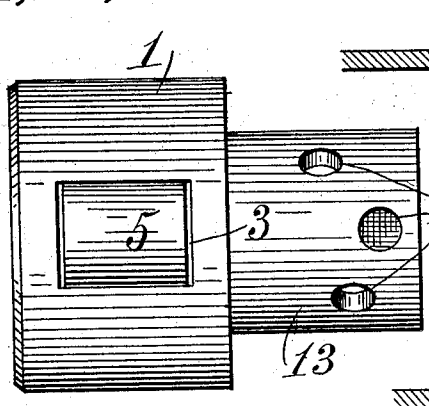


Fig. 4.

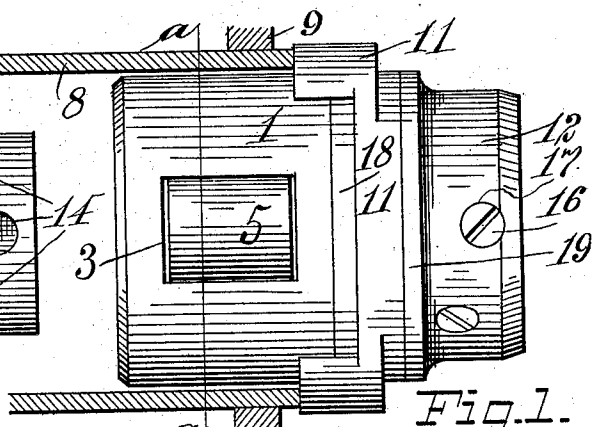


Fig. 1.

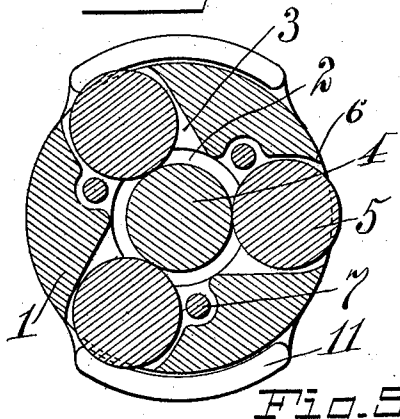


Fig. 5.

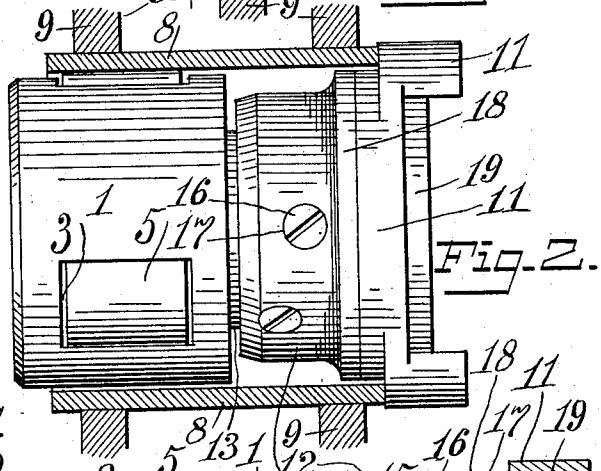


Fig. 2.

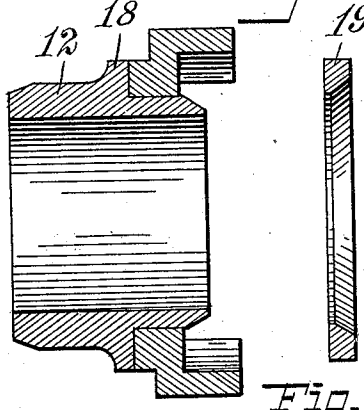


Fig. 6.

Fig. 7.

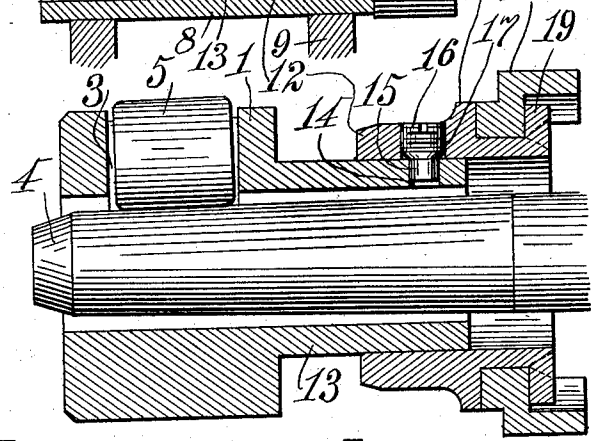


Fig. 3.

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UNITED STATES PATENT OFFICE.

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TUBE-EXPANDER.

1,102,994. Specification of Letters Patent. Patented July 7, 1914.

Application filed January 10, 1914. Serial No. 811,297.

To all whom it may concern:

Be it known that I, OTTO WIEDEKE, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Tube-Expanders; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in tube-expanders.

The object of the invention is to provide a device of this type which is simple and durable in construction and efficient in operation. In addition to expanding the ends of ordinary boiler tubes, the device is adapted to expand both ends of varying size nipples when operating from one end of the nipple. The device is especially adapted for use in connection with certain types of water tube boilers such as the "B and W" boilers in which the headers are connected to the steam and mud drums by nipples or short tubes which are accessible for expansion from one end of the tubes only.

Referring to the accompanying drawings, Figure 1 is a side elevation of my improved expander in position within the end of a boiler tube; Fig. 2 is a similar view with the guard in a different position; Fig. 3 is a longitudinal sectional view through the expander with the guard in a still different position; Fig. 4 is a side elevation of the cage or body portion; Fig. 5 is a section on the line *a*—*a* of Fig. 1; and Figs. 6 and 7 are detail sectional views of the guard.

In the specification and drawings, similar reference characters indicate corresponding parts.

Referring more particularly to the drawings, 1 represents a body portion or roller cage which is provided with a central longitudinal mandrel opening 2 and radial roller pockets 3. The mandrel opening 2 receives a well known type of mandrel 4 which is adapted to expand rollers 5 lying in the pockets 3. The said rollers 5 are maintained in the pockets by any suitable means which, in the present instance, consist of outer ledges 6 and inner pins 7. When the tool is in use, the case 1 is inserted into the end of a tube or nipple 8 and the rollers are pressed out against the inner side of said tube or nipple by rotating the mandrel 4. The position of the rollers 5 in the tube 8 should be opposite the tube sheet or header 9, and to facilitate the proper placing of the expander in said tube a double faced guard 11 is provided. This guard 11 is rotatably mounted on a sleeve 12 mounted on an annular projection 13 which extends from the cage 1. The projection 13 is provided with a plurality of openings 14 adapted to receive ends 15 of screws 16 which are received by screw-threaded openings 17 in the sleeve 12. The openings 17 are located varying distances from the cage 1 which permits the guard 11 to be adjusted relatively to the rollers 5. When the expander is operating upon the adjacent end of the tube or nipple 8, the guard 11 is placed in the position shown in Fig. 1 with one face thereof in engagement with the tube; but, when the rollers are expanding the remote end of a nipple, the guard is reversed and is mounted in the positions shown in Figs. 2 and 3 with the other face of the guard in engagement with the tube. The said guard 11 is held upon the sleeve 12 by thrust-collars 18 and 19 which are integral with the sleeve. To permit the said guard 11 to be mounted between the collars, the sleeve 12 and the collar 19 are made of separate members as is shown in Figs. 6 and 7 and are subsequently welded by any suitable process such as the oxy-acetylene process. By this means of uniting the collar 19 to the sleeve 12, one sleeve is capable of resisting the same amount of force as the other, and the guard may be used in either of its positions, as shown in Figs. 1 and 2, with the same degree of efficiency.

Having described my invention, I claim.

1. In a device of the type specified, a cage having a mandrel opening and roller openings, rollers mounted in said roller openings, a mandrel mounted in said mandrel opening, an annular projection extending from said cage, a reversible sleeve adjustably mounted on said projection, means for securing said sleeve to said projection, a double faced guard mounted on said sleeve, and thrust-collars mounted on said sleeve and between which the guard is mounted.

2. In a device of the type specified, a cage

having a mandrel opening and roller openings, rollers mounted in said roller openings, a mandrel mounted in said mandrel opening, an annular projection extending from said cage, a reversible sleeve adjustably mounted on said projection, means for securing said sleeve to said projection, a double faced guard mounted on said sleeve, and thrust-collars integral with and mounted on said sleeve and between which the guard is mounted.

In testimony whereof I affix my signature, in presence of two witnesses.

OTTO WIEDEKE.

Witnesses:
BERTHA WIEDEKE,
MATTHEW SIEBLER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."